



**NCTA**

NATIONAL CABLE & TELECOMMUNICATIONS ASSOCIATION

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December 8, 2004

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

**Re: Interference by UWB and Unlicensed Devices to C-Band Earth Station  
Receivers Ex Parte Presentation; ET Docket Nos. 98-153 and 02-380**

Dear Ms. Dortch:

On December 6, 2004, Daniel L. Brenner, Senior Vice President, Law & Regulatory Policy, William A. Check, Senior Vice President, Science & Technology, Rex Bullinger, Director, Broadband Technology, and I met with Sam Feder, Legal Advisor to Commissioner Martin.

NCTA representatives, in addition to presenting the views expressed in the attached letter of William Check of December 3, 2004 to the Commission's Secretary, made several additional points which are described more fully herein.

First, NCTA noted that the Commission's practice with respect to new services that may cause interference to existing operations has been to implement processes to protect incumbents from harmful interference. This is of particular concern to the cable industry because UWB devices are unlicensed and therefore not readily identifiable. If UWB devices become ubiquitous, there is a significant possibility that the cumulative effect of UWB device emissions will degrade the quality of C-band transmissions.

There is apparently no plan to put in place a process for addressing and ameliorating interference should it arise. The Commission should adopt a procedure to do so. It should also place manufacturers and users of UWB devices on notice that users may be required to cease operation or reduce the emitted power of UWB devices if these devices are shown to cause harmful interference to C-band transmissions. In the alternative, at the very least, the Commission should commit to the initiation of a notice of proposed rulemaking leading to the adoption of the necessary procedures.

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Second, we note and attach for inclusion in the record the February 24, 2004 "Press Release" of MultiSpectral Solutions, Inc. ("MSSI"), "MSSI Comments on Recent Interference Study From Coalition of C-Band Constituents." MSSI states that "these results represent analysis and a perspective of considerable importance to both UWB companies and the FCC. For the reasons outlined in the Coalition report and others, MSSI chose early in the game to develop its commercial UWB equipment in bands above 6 GHz."

If you have any questions concerning this matter, please contact the undersigned at 202-775-3664.

Respectfully submitted,

**/s/ David L. Nicoll**

David L. Nicoll

Attachments

cc: S. Feder



December 3, 2004

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington DC 20554

**Re: Interference by UWB and Unlicensed Devices to C-Band EarthStation  
Receivers Ex Parte Presentation; ET Docket Nos. 98-153 and 02-380**

Dear Ms. Dortch:

As the principal trade association of the cable television industry in the United States, NCTA represents cable operators serving more than 90% of the nation's cable television subscribers, more than 200 cable programming networks, and suppliers of equipment and services to the cable industry.

In its Memorandum Opinion and Order and Further Notice of Proposed Rule Making, the Commission identified a need for "more experience with UWB devices."<sup>1</sup> It also stated its intent "to continue our review of the UWB standards to determine where additional changes warrant consideration." In response, the Coalition of C-Band Constituents ("Coalition") has been evaluating the potential threat of Ultra Wideband ("UWB") interference to the 3.7 – 4.2 GHz ("C-Band") frequency band, and thus the capability of cable program networks and cable operators to continue to distribute high quality video via satellite. NCTA submits this *ex parte* letter in support of the Coalition's position.

National cable program networks use satellite relay for distribution of their programming services. These program networks are received at more than 9,000 cable television "headends," most of which use C-Band antennas and receivers. Satellite distribution is a core technology of the cable television industry, and is the primary method for distribution of high quality video signals. Any degradation of these signals could have an impact on subscribers of cable television. Consequently, the Commission should carefully consider the implications of using UWB within the C-Band frequency spectrum.

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<sup>1</sup> Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 3857, 3858 (2003).

Users of C-Band spectrum have already achieved many of the goals set forth by the Commission's Spectrum Policy Task Force<sup>2</sup> ("Task Force"), which was formed to assist the Commission in the identification of changes in spectrum policy that will increase the public benefits derived from the use of radio spectrum. Part of the Task Force's efforts focused on improving spectral efficiency in temporal "white space," where the spectrum lies fallow in between communications uses. In the case of the 3.7 – 4.2 GHz C-Band, the spectrum is in continuous use 24 hours a day, 7 days per week, and there is very little free spectrum that is not used on a continuous basis. In addition, this C-Band spectrum heavily utilizes efficient modulation schemes such as QPSK, which already challenge link budgets and satellite transponder capacity. The planned use of less robust, higher-capacity modulation schemes (such as 8-PSK) that are needed for data-intensive services, such as high-definition television, will be further susceptible to interference. Moreover, C-Band spectrum usage is maximized by satellites that are spaced two degrees apart using earth station antenna technology that can discriminate between these closely spaced satellites. These factors suggest that Commission goals would be better served through the use of the 5.925 – 6.425 GHz uplink spectrum for UWB while reducing the use of the 3.7 – 4.2 GHz downlink band by 21 dB as suggested by the Coalition in its recommendations.<sup>3</sup>

Television signals received in the 3.7 – 4.2 GHz C-Band must remain error-free. Cable television programs received via C-Band signals at the cable headend are retransmitted through the cable system to the subscriber. Even a slightly degraded signal due to increased noise will reduce satellite link margins, system availability and ultimately can lower the quality of services that are provided to consumers.

UWB has been authorized for use in the C-Band assuming that if each individual UWB emitter operates within current Part 15 power limits, then there will be minimal degradation of the satellite signals received by C-Band earth stations. The concern with this approach is that there is no limitation on the number of UWB emitters. Indeed, advocates of UWB state that the use of this technology will become widespread. As a result, it is possible that the aggregation of emissions of the UWB emitters will create an effective noise floor greater than currently is the case with Part 15 devices. If the noise floor becomes great enough, it will degrade the signals received by C-Band earth station antennas. Under the current rules, cable operators and cable programmers have no guarantee that satellite distribution systems will remain free from interference.

Finally, since the mid-1970's when satellite distribution of television signals proved technologically and economically viable, program distribution by satellite to cable has had significant growth. With that growth has come 30 years of operational experience and efficiencies in equipment design. Many of these increases in efficiency have inevitably been

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<sup>2</sup> "FCC Spectrum Policy Task Force," Report of the Unlicensed Devices and Experimental License Working Group, ET Docket No. 02-135, Nov. 15, 2002.

<sup>3</sup> Coalition of C-Band Constituents, Ex Parte Presentation in ET Docket No. 98-153, Feb. 18, 2004.

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based upon the logical assumption of stability of the radio frequency channel characteristics in the C-Band satellite downlink. One of the most important of these characteristics is channel noise floor. Reception of C-Band satellite signals by cable operators should not be placed at risk due to additions to the noise floor resulting from UWB device emissions.

There are potential public benefits of UWB. However, because of its unique property of exploiting spectrum already occupied, its success depends upon a well engineered integration to successfully co-exist with other communications systems. Due to the potential problems that could be created within the C-Band spectrum, a cautious approach should be taken. The Coalition has made recommendations how UWB can co-exist with C-Band while minimizing the risk of interference, including urging the Commission to modify its rules for UWB devices within the C-Band spectrum. NCTA urges the Commission to adopt those recommendations.

Sincerely,

**/s/ William A. Check**

William A. Check, Ph.D.  
Senior Vice President  
Science & Technology

cc: Chairman Michael K. Powell  
Commissioner Kathleen Q. Abernathy  
Commissioner Michael J. Copps  
Commissioner Kevin J. Martin  
Commissioner Jonathan S. Adelstein  
Ed Thomas  
Julius P. Knapp  
Donald Abelson  
W. Kenneth Ferree

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## MSSI COMMENTS ON RECENT INTERFERENCE STUDY FROM COALITION OF C-BAND CONSTITUENTS

**Germantown, MD – February 24, 2004** – In an extensive study [1] on the effects of Ultra Wideband (UWB) emissions on C-band satellite earth station receivers, the Coalition of C-Band Constituents – an organization of 19 companies including such well known corporate entities as A&E, CBS, C-SPAN, Discovery, E!, Fox Network, Fox Cable, HBO, Lifetime, MTV, Showtime, Starz!, USA and Warner Bros. – submitted its findings and recommendations to the Federal Communications Commission (FCC) for co-existence between UWB devices and C-band satellite services used by millions of TV and radio users in the U.S.

Specifically, the Coalition study recommended that, in order to mitigate the potential for serious harm to C-band satellite reception in the 3700-4200 MHz band, UWB devices expected to be found in high densities operating at the FCC Part 15 power levels should be required to emit in other frequency bands, such as the C-band satellite transmit uplink frequencies (5925-6425 MHz). Furthermore, those devices that must operate in the 3700-4200 MHz band should be required to reduce their emission within this band 21 dB below the power levels set in the FCC's rules.

Commenting on the 123 page C-Band study, Dr. Robert Fontana, Multispectral Solutions, Inc. (MSSI) President, stated that “these results represent analyses and a perspective of considerable importance to both UWB companies and the FCC. For the reasons outlined in the Coalition report and others, MSSI chose early in the game to develop its commercial UWB equipment in bands above 6 GHz. Our FCC-certified PAL650 UWB Precision Asset Location System and SPIDER UWB radar sensor both operate in the Coalition-recommended upper C-band frequencies.” Dr. Fontana also noted that “the currently proposed UWB designs for 802.15.3a, high-speed wireless personal area networks (WPAN) – both MB-OFDM and wideband CDMA – operate within the highly sensitive 3.7-4.2 GHz satellite band. As a consequence, there will likely be continuing regulatory concerns which may affect the introduction of UWB into the WPAN marketplace.”

[1] "ET Dockets 98-153 and 02-380, Study of Interference by UWB and Unlicensed Devices to C-band Earth Station Receivers," 18 February 2004 , submitted to FCC by Coalition of C-Band Constituents.

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